

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (withdrawn): A method of controlling a contact angle of water on a hydrophilic surface of an article which comprises:

(1) a step for releasing a substance for increasing a contact angle of water which provides a surface having a contact angle of water larger than that of the hydrophilic surface of the article, from a material for controlling a contact angle of water which contains the substance for increasing a contact angle of water, and

(2) a step for increasing the contact angle of water on the hydrophilic surface of the article by bringing the released substance for increasing a contact angle of water into contact with the surface of the article to adhere the substance to the surface of the article.

2. (withdrawn): The method of control of Claim 1, wherein means to release the substance for increasing a contact angle of water from the material for controlling a contact angle of water is application of energy.

3. (currently amended): A method of controlling a contact angle of water on a surface of an article, in which the article surface is comprised of a substance being capable of decreasing a contact angle of water by application of energy and the method comprises:

(1) a step for releasing a substance for increasing a contact angle of water which provides a surface having a contact angle of water larger than that of the article surface, from a material

for controlling a contact angle of water which contains the substance for increasing a contact angle of water,

(2) a step for increasing the contact angle of water of the article surface by bringing the released substance for increasing a contact angle of water into contact with the article surface to adhere the substance to the article surface, and

(3) a step for decreasing the contact angle of water on the article surface by applying energy to the article to which the substance for increasing a contact angle of water was adhered to release the substance for increasing a contact angle from the article.

4. (original): The method of control of Claim 3, wherein the contact angle of water on the article surface is controlled reversibly by repeating said steps (1) to (3).

5. (withdrawn): The method of control of claim 2, wherein the energy to be applied is light energy, thermal energy or electromagnetic energy.

6. (withdrawn): The method of control of claim 1, wherein the material for controlling a contact angle of water which contains the substance for increasing a contact angle of water comprises the substance for increasing a contact angle alone or is a liquid or solid containing the substance for increasing a contact angle of water.

7. (withdrawn): The method of control of claim 2, wherein a hydrophilic portion and a hydrophobic portion are selectively provided by selectively applying the energy to a specific region on the hydrophilic surface.

8. (withdrawn): The method of control of Claim 7, wherein the energy to be applied is light energy or electromagnetic energy, and the energy is selectively applied by changing a wavelength of light or electromagnetic wave.

9. (withdrawn): The method of control of Claim 7, wherein the energy is selectively applied by changing an amount of the applying energy.

10. (withdrawn): The method of control of Claim 7, wherein the energy to be applied is light energy and the light energy is applied selectively to a specific region on the hydrophilic surface through a light-shielding pattern to selectively provide a hydrophilic portion and a hydrophobic portion.

11. (withdrawn): The method of control of Claim 7, wherein means to selectively apply energy is irradiation of light.

12. (withdrawn): The method of control of Claim 11, wherein a light source is a laser generator, an ultraviolet lamp or a mercury lamp.

13. (withdrawn): The method of control of Claim 11, wherein the method of light irradiation is an irradiation method being capable of changing a focus in the depth direction.

14. (withdrawn): The method of control of Claim 7, wherein means to selectively apply energy is irradiation of electron beam.

15. (previously presented): The method of control of claim 3, wherein the substance being capable of decreasing a contact angle of water by application of energy is a substance having photocatalytic action.

16. (withdrawn): The method of control of claim 5, wherein the substance being capable of decreasing a contact angle of water by irradiation of light energy is titanium oxide.

17. (withdrawn): The method of control of claim 1, wherein the material for controlling a contact angle of water is polydimethylsiloxane containing the substance for increasing a contact angle of water.

18. (withdrawn): The method of control of claim 1, wherein the substance for increasing a contact angle of water is an organosilicon compound.

19. (withdrawn): A method of forming a pattern having a different contact angle of water on a sheet-like article having a hydrophilic surface, which comprises:

(1) a step for releasing a substance for increasing a contact angle of water which provides a surface having a contact angle of water larger than that of the hydrophilic sheet-like article, from a material for controlling a contact angle of water which contains the substance for increasing a contact angle of water, and

(2) a step for forming a portion having an increased contact angle of water by bringing the released substance for increasing a contact angle of water into contact with the sheet-like article surface with a mask pattern being placed between the substance for increasing a contact angle of water and the sheet-like article, to adhere the substance to the article surface in the form of pattern.

20. (withdrawn): A method of forming a pattern having a different contact angle of water on a sheet-like article having a hydrophilic surface, which comprises:

(1) a step for selectively releasing a substance for increasing a contact angle of water which provides a surface having a contact angle of water larger than that of the hydrophilic sheet-like article, from a material for controlling a contact angle of water which contains the substance for increasing a contact angle of water, by selectively applying energy to the material for controlling a contact angle of water through a mask pattern, and

(2) a step for forming a portion having an increased contact angle of water by bringing the selectively released substance for increasing a contact angle of water into contact with the sheet-like article surface to adhere the substance to the article surface in the form of pattern.

21. (withdrawn): The method of pattern formation of Claim 19, wherein means to release the substance for increasing a contact angle of water from the material for controlling a contact angle of water is application of energy.

22. (withdrawn): A method of forming a pattern, in which a sheet-like article surface is comprised of a substance being capable of decreasing a contact angle of water by application of energy thereto and the method comprises:

(1) a step for releasing a substance for increasing a contact angle of water which provides a surface having a contact angle of water larger than that of the sheet-like article surface, from a material for controlling a contact angle of water which contains the substance for increasing a contact angle of water,

(2) a step for increasing a contact angle of water by bringing the released substance for increasing a contact angle of water into contact with the sheet-like article surface to adhere the substance for increasing a contact angle of water to the article surface, and

(3) a step for forming a pattern having a different contact angle of water by selectively applying energy through a mask pattern to the sheet-like article to which the substance for increasing a contact angle of water was adhered, to decrease a contact angle of water on the energy-applied surface.

23. (withdrawn): The method of pattern formation of claim 21, wherein the energy to be applied is light energy, thermal energy or electromagnetic energy.

24. (withdrawn): The method of pattern formation of claim 19, wherein the material for controlling a contact angle of water which contains the substance for increasing a contact angle of water comprises the substance for increasing a contact angle alone or is a liquid or solid containing the substance for increasing a contact angle of water.

25. (withdrawn): The method of pattern formation of claim 19, wherein the sheet-like article is glass.

26. (withdrawn): The method of pattern formation of claim 19, wherein the sheet-like article is glass coated with titanium oxide which was subjected to hydrophilization treatment.

27. (withdrawn): An article having, on its surface, a pattern formed by the method of pattern formation of claim 19.

28. (withdrawn): A sensor chip substrate to be used for biochemical analysis which has, on its surface, a pattern formed by the method of pattern formation of claim 19.

29. (withdrawn): The method of pattern formation of claim 19, wherein the sheet-like article is a starting material for a lithographic printing plate and the formed pattern is a printing pattern.

30. (withdrawn): A lithographic printing plate having, on its surface, the pattern formed by the method of pattern formation of Claim 29.

31. (withdrawn): A method of forming a pattern having a different contact angle of water on a sheet-like article having a hydrophilic surface, which comprises:

(1) a step for bringing the hydrophilic surface of the sheet-like article into close contact with a pattern made of a material for controlling a contact angle of water which contains a substance for increasing a contact angle of water which provides a surface having a contact angle of water larger than that of the sheet-like article,

(2) a step for releasing the substance for increasing a contact angle of water from the pattern made of the material for controlling a contact angle of water, and

(3) a step for forming a pattern having an increased contact angle of water by adhering the released substance for increasing a contact angle of water to the sheet-like article surface.

32. (withdrawn): The method of pattern formation of Claim 31, wherein means to release the substance for increasing a contact angle of water from the material for controlling a contact angle of water is application of energy.

33. (withdrawn): A method of forming a pattern having a different contact angle of water on a sheet-like article having a surface comprised of a substance being capable of decreasing a contact angle of water by application of energy thereto, said method comprises:

(1) a step for bringing the surface of the sheet-like article into close contact with a pattern made of a material for controlling a contact angle of water which contains a substance for increasing a contact angle of water which provides a surface having a contact angle of water larger than that of the sheet-like article,

(2) a step for applying energy to the sheet-like article through the pattern made of the material for controlling a contact angle of water, and

(3) a step for decreasing the contact angle of water of the energy-applied region on the surface of the sheet-like article and increasing the contact angle of water by releasing the substance for increasing a contact angle of water from the pattern made of the material for controlling a contact angle of water to adhere the substance for increasing a contact angle of water to the sheet-like article surface contacting the pattern made of the material for controlling a contact angle of water.

34. (withdrawn): The method of pattern formation of Claim 32, wherein the energy to be applied is light energy, thermal energy or electromagnetic energy.

35. (canceled).

36. (previously presented): The method of control of Claim 3, wherein the energy to be applied is light energy, thermal energy or electromagnetic energy.

37. (previously presented): The method of control of Claim 3, wherein the material for controlling a contact angle of water which contains the substance for increasing a contact angle of water comprises the substance for increasing a contact angle of water alone or is a liquid or solid containing the substance for increasing a contact angle of water.

38. (previously presented): The method of control of Claim 3, wherein a hydrophilic portion and a hydrophobic portion are selectively provided by selectively applying the energy to a specific region on the hydrophilic surface.

39. (previously presented): The method of control of Claim 38, wherein the energy to be applied is light energy or electromagnetic energy, and the energy is selectively applied by changing a wavelength of light or electromagnetic wave.

40. (previously presented): The method of control of Claim 38, wherein the energy is selectively applied by changing an amount of the applying energy.

41. (previously presented): The method of control of Claim 38, wherein the energy to be applied is light energy and the light energy is applied selectively to a specific region on the hydrophilic surface through a light-shielding pattern to selectively provide a hydrophilic portion and a hydrophobic portion.

42. (previously presented): The method of control of Claim 38, wherein means to selectively apply energy is irradiation of light.

43. (previously presented): The method of control of Claim 42, wherein a light source is a laser generator, an ultraviolet lamp or a mercury lamp.

44. (previously presented): The method of control of Claim 42, wherein the method of light irradiation is an irradiation method being capable of changing a focus in the depth direction.

45. (previously presented): The method of control of Claim 38, wherein means to selectively apply energy is irradiation of electron beam.

46. (previously presented): The method of control of Claim 3, wherein the material for controlling a contact angle of water is polydimethylsiloxane containing the substance for increasing a contact angle of water.

47. (previously presented): The method of control of Claim 3, wherein the substance for increasing a contact angle of water is an organosilicon compound.

48. (withdrawn): The method of pattern formation of Claim 20, wherein means to release the substance for increasing a contact angle of water from the material for controlling a contact angle of water is application of energy.

49. (withdrawn): The method of pattern formation of Claim 22, wherein the energy to be applied is light energy, thermal energy or electromagnetic energy.

50. (withdrawn): The method of pattern formation of Claim 48, wherein the energy to be applied is light energy, thermal energy or electromagnetic energy.

51. (withdrawn): The method of pattern formation of Claim 20, wherein the material for controlling a contact angle of water which contains the substance for increasing a contact angle of water comprises the substance for increasing a contact angle of water alone or is a liquid or solid containing the substance for increasing a contact angle of water.

52. (withdrawn): The method of pattern formation of Claim 22, wherein the material for controlling a contact angle of water which contains the substance for increasing a contact angle of water comprises the substance for increasing a contact angle of water alone or is a liquid or solid containing the substance for increasing a contact angle of water.

53. (withdrawn): The method of pattern formation of Claim 20, wherein the sheet-like article is glass.

54. (withdrawn): The method of pattern formation of Claim 22, wherein the sheet-like article is glass.

55. (withdrawn): The method of pattern formation of Claim 20, wherein the sheet-like article is glass coated with titanium oxide which was subjected to hydrophilization treatment.

56. (withdrawn): The method of pattern formation of Claim 22, wherein the sheet-like article is glass coated with titanium oxide which was subjected to hydrophilization treatment.

57. (withdrawn): An article having, on its surface, a pattern formed by the method of pattern formation of Claim 20.

58. (withdrawn): An article having, on its surface, a pattern formed by the method of pattern formation of Claim 22.

59. (withdrawn): A sensor chip substrate to be used for biochemical analysis which has, on its surface, a pattern formed by the method of pattern formation of Claim 20.

60. (withdrawn): A sensor chip substrate to be used for biochemical analysis which has, on its surface, a pattern formed by the method of pattern formation of Claim 22.

61. (withdrawn): The method of pattern formation of Claim 20, wherein the sheet-like article is a starting material for a lithographic printing plate and the formed pattern is a printing pattern.

62. (withdrawn): The method of pattern formation of Claim 22, wherein the sheet-like article is a starting material for a lithographic printing plate and the formed pattern is a printing pattern.

63. (withdrawn): A lithographic printing plate having, on its surface, the pattern formed by the method of pattern formation of Claim 61.

64. (withdrawn): A lithographic printing plate having, on its surface, the pattern formed by the method of pattern formation of Claim 62.

65. (withdrawn): The method of pattern formation of Claim 33, wherein the energy to be applied is light energy, thermal energy or electromagnetic energy.

66. (withdrawn): The method of pattern formation of Claim 65, wherein the energy to be applied is light energy and the substance being capable of decreasing a contact angle of water is titanium oxide.